

space. Mr. Douglas's "Sayings and Doings" may be everything that could be wished, and we must congratulate Mr. Scott upon the results of his residence at Fochabers, since they appear to have been so agreeable to that gentleman personally, that he wishes to make the Entomological public partakers of his happiness, as far as can be done by the imperfect medium of type, ink, and paper—a kind intention, for which he deserves great credit; but we think that such papers as these are hardly suited to the pages of this Annual,—about the last place in which we should think of looking for light reading.

The space to be devoted to these and similar articles might also be occupied in a manner which would add greatly to the value of the book, and prove highly acceptable to the generality of British entomologists, who are by no means notorious for an extensive acquaintance with foreign Entomological literature. Thus, a few pages might be devoted to notices of new observations, published in foreign countries, upon the habits and transformations of species of insects which also inhabit Britain, and a list of those foreign works published during the year which contain descriptions of insects which are, or may possibly be, found in these islands, would be a great assistance to many of our entomologists. If space still remained unoccupied, there is another branch of the science which has not yet been thought of—the anatomy and physiology of insects. Short abstracts of important papers on these subjects would not be out of place, and would not only be useful to the few who devote themselves to such pursuits in this country, but might have the effect of adding greatly to their numbers.

With these suggestions we take leave of the "Entomologist's Annual for 1855," wishing it every success, and trusting that each succeeding volume may show such an improvement upon its predecessors, that, in the course of a year or two, their resemblance to their present "larval" representative may scarcely be greater than is exhibited by the Editor's favourite insects in their first and last states.

A Catalogue of British Fossils, comprising the Genera and Species hitherto described; with references to their Geological Distribution and the Localities in which they have been found. By JOHN MORRIS, F.G.S. Second Edition, considerably enlarged. 8vo. London, 1854. Printed and published for the Author (Kennington).

Since the time when it was discovered that particular fossils are characteristic of certain deposits, and that thereby, as a general rule, fossiliferous strata of districts even remote from each other may be identified as contemporaneous deposits and members of one stratigraphical series, the science of geology has attained an established position, and has proved not only of interest to the philosopher, but of value to the practical man. Geologists therefore have necessarily given increased attention to the study of petrifications or fossilized

organic remains; and the science of Palæontology has rapidly advanced, keeping pace with the researches of zoologists and botanists devoted to the study of existing nature.

Mr. Morris's 'Catalogue' affords us the results of the numerous examinations of the fossils of the British Islands, both by native and foreign palæontologists. These researches, scattered through numerous works—periodical, monographic, and miscellaneous—were of limited value until brought within the reach of geologists in such a compendious form as the work now before us.

However well acquainted one may be with the bibliography and natural history of one or more groups of fossil creatures, whether bivalves, cephalopods, fishes, or any other,—and however readily he may exchange his knowledge with his fellow-workers in palæontology and give assistance to the practical geologist, yet, from the loss of time in hunting up references and figures of fossils,—the uncertainty of memory,—the mislaying of note-books, and a hundred other reasons, we well know that geological work cannot satisfactorily proceed without our having at hand a trustworthy book of reference to all described and figured species of organic remains.

Some ten years ago Mr. Morris produced such a work, thereby supplying the want then felt, and which the partial lists of fossils already compiled could not meet. Since 1843 geologists have extended their researches, both over new localities, and in parts of the organic kingdom previously but little studied; and an enormous increase of palæontological observations has been the result. That these observations should prove of their full value, it was high time that they should be reduced to order and brought to the test of strict comparison. With renewed energy and increased knowledge the author has again applied himself to the crowd of names and synonyms, and has now marshalled in alphabetical array, in their several classes, families, orders, and genera, upwards of 8300 species of British fossils.

In carrying out this arrangement the author submitted some sections of his work to those of his scientific friends who had respectively paid attention to the several groups of fossils; and the assistance rendered him in these departments the author freely acknowledges in the Preface, where he assigns to each his due, and carefully notices the public and private collections from which he has gathered information and received assistance.

Many of the palæontographical notes and memoirs recently published, especially in the case of monographs, have done much to the correction of the nomenclature of the subject. Of these Mr. Morris has fully availed himself.

The following Table exhibits the numerical proportions of the several palæontological groups for Great Britain and Ireland (and approximately for Europe and elsewhere),—together with the difference of numbers of the organic remains enumerated in the previous edition compared with those now catalogued.

2nd Edition.			1st Edition.		Additional.	
Genera.	Species.		Genera.	Species.	Genera.	Species.
123	655		109	530	14	125
21	71	{ Plantæ	5	6	16	65
31	139	{ Diatomaceæ	18	77	13	62
1	14	{ Amorphozoa	1	14	0	0
37	182	{ Xanthidium	27	82	10	100
127	435	{ Foraminifera	35	180	92	255
99	492	{ Zoophyta	66	260	33	232
19	132	{ Echinodermata	13	79	6	53
8	44	{ Annelida	7	21	1	23
80	298	{ Cirripedia	48	161	32	137
58	...	{ Crustacea	13	...	45	...
62	258	{ Insecta	30	130	32	128
31	619	{ Bryozoa	14	452	17	167
26	572	{ Paliobranchiata	20	330	6	242
106	1069	{ Lamelliobranchiata { Monomyaria	78	725	28	344
1	1	{ Dimyaria	4	4	0	0
5	13	{ Rudista	3	7	2	6
145	1596	{ Pteropoda	119	818	26	778
3	45	{ Opisthobranchiata, Pulmoni-	2	29	1	16
28	675	{ fera, and Prosobranchiata	21	467	7	208
238	741	{ Nucleobranchiata	148	540	90	201
48	153	{ Cephalopoda	33	91	15	62
7	29	{ Pisces	2	2	5	4
11	11	{ Reptilia	7	7	4	4
56	96	{ Ichtnites	33	52	23	44
8	19	{ Aves	7	10	1	9
		{ Mammalia				
		{ Incertæ sedis				
1379	8359		863	5074	519	3288

We will now offer some remarks on the separate groups above tabulated; reminding our readers that not merely do the differential numbers indicate the addition of a large mass of published material to the lists (viz. 3388 species), but that, besides the absolute numerical increase of species, an important change has often taken place in the presumed generic and specific relations of previously recorded fossils, tasking the critical acumen of the Author and demanding much labour. This result cannot be readily seen by the figures, but practical palæontologists will quickly discover it, and it may be seen in even a cursory comparison of this with the former edition.

The increased number of recorded fossil Plants is chiefly derived from the Jurassic and Tertiary beds. To those from the latter should also be added the twenty-two forms of fossil leaves, &c. from the Lower Eocene clay of Reading, figured by Mr. Prestwich, and the other tertiary plant-remains described by the same geologist, and, with the former, noticed in the "Addenda" of the 'Catalogue,' p. 363; where from 300 to 400 species of fruits from the London Clay in Mr. Bowerbank's collection are also referred to as being still undescribed. The Diatomaceæ are in this edition grouped with the plants (at p. 25), in accordance with the corrected notions of naturalists with regard to the affinities of these organisms. Doubtless this short list of the siliceous infusoria may be increased by judicious microscopical research; but we cannot too strongly urge upon those who may take in hand the examination of any deposit with the view of searching for these remains and enlarging the bounds of "Microgeology," that the utmost care should be taken that the examination is made with hands and instruments innocent of errant infusoria, and in fact in apartments into which stray Diatomaceæ do not come. Rich fields for palæobotanical research are still open in the London Clay, and in the tertiary plant-beds of Newhaven, Alum Bay, Bournemouth, Poole, and Corfe; and, not to speak of the Jurassic coal-deposits, we must remind geologists that the Carboniferous flora of Great Britain has not nearly received the labour it deserves of our geologists and palæobotanists, and that it requires much attention before it can be fairly compared with the "palæozoic" floras of the Continent and other regions. We may here observe that Dr. Hooker's notice of the *Trigonocarpon*, read before the Royal Society, refers this fruit to the Coniferæ; a correction to this effect may be made at p. 24 of the 'Catalogue.'

A large proportion of the increase of the Amorphozoa is due to the addition of the thirty-six species (belonging to four genera) of the Ventriculidæ, so elaborately worked out by Mr. Toulmin Smith. The position here assigned to this group does not accord with that advocated by their investigator. As their assumed polyzoan character has not been generally accepted, nor their exact relations recognized, probably they owe their present location solely to the hospitality of the Amorphozoa, and may be they rest contented, on the principle that a "home is home however homely."

From the large access of species and the numerous indications of undetermined or unpublished forms in the list of the Foraminifera, it

appears that much may be expected of future investigators of these curious microscopic forms. The not unfrequent occurrence of lengthy lists of synonyms, especially at pages 33, 37, 39, and 41, may be referred to as an indication not only of the interest taken in this group by the author and his friends (Messrs. S. V. Wood, T. R. Jones, and W. Harris) to whom he refers in the Preface, but also by numerous naturalists of ancient and modern times. Some of the genera appear to be common to several formations, *e. g.* *Textularia*, coming down from the Carboniferous Limestone and Permian to the Tertiary and Recent Epochs (and we may add that this genus occurs also in the Upper Silurian); but others are limited in their vertical range, and furnish more reliable characteristic species for the geologist. Among these latter the Nummulite is pre-eminent; although the important exceptions of a few peculiar ancient Nummulitoid forms,—from the Upper Jurassic of the Dep. de la Meuse (Buvignier), the Lias of Fretherne, Gloucestershire* (Jones), and the Carboniferous Limestone of Miatschlous, Russia (Rouillier), as well as another, similar perhaps to the last, from the Upper Silurian of Shropshire,—must not be lost sight of by the palæontologist. The specific forms of the Nummulite, though very closely allied and subject to individual vagary and local variations, are highly characteristic, and play an important part on the tertiary stage. A masterly sketch of the zoological and geological relations of this interesting genus, comprising a review of M. D'Archiac's monograph, occupies several pages of the Presidential Address delivered to the Geological Society of London, February 17, 1854, by the late and most sincerely lamented Prof. E. Forbes.

In the former edition both the Bryozoa and the Anthozoa were included under Zoophyta. The former (so often confounded by amateurs and others with Corals, and not unfrequently also erroneously termed Corallines), being now regarded as molluscan in their relations, are separately grouped. The Zoophytes, as they now stand (Anthozoa or Corals), exhibit a very extensive augmentation of species, resulting from the labours of Messrs. Lonsdale and M'Coy, and their French collaborateurs, MM. M.-Edwards and J. Haime.

In noticing the present advanced state of our knowledge of the fossil Echinodermata, as exhibited in the 'Catalogue,' we have again to refer to one whose loss the scientific world deplures and whose early departure bereaves so many sorrowing friends. Prof. E. Forbes and Messrs. Austin, M'Coy, and Wright have worked well in this department; the addition of the Cystideæ and the very complete and well-determined list of the other forms render this portion of the 'Catalogue' of the greatest value. Not only for a large proportion of the material of this list, but for its arrangement and revision, we are indebted to the lamented chief of British palæontologists. The chief additions to the Annelida are palæozoic species; and several neozoic species are brought into position under *Vermicularia*.

The Cirripedia, both fossil and recent, have of late, as naturalists

* Annals and Mag. Nat. Hist. 2nd Ser. vol. xii. p. 275.

well known, been critically examined by Mr. C. Darwin. The list, as it now appears, doubled in number and highly valuable for its accuracy and completeness, has been founded on Mr. Darwin's Monographs, and has been subject to his revision.

The large number of species accruing from recent researches among the fossil Crustaceans is an important element in this catalogue, and indicates the industry of the observers. The extensive corrections, also, of the generic affinities imply a great amount of labour and a decided advance in our palæontological knowledge of this interesting subclass of the Invertebrata. The Malacostraca, or higher forms, are but few in proportion to the Entomostraca. They afford only 46 species, in 26 genera, and are chiefly jurassic, cretaceous, and eocene. Their present arrangement and nomenclature are mainly due to Prof. M'Coy. Of the Entomostraca there are three groups which are worthy of notice. Firstly; the Trilobites so characteristic of the Lower Palæozoic rocks. They are very numerous and present 139 species, in 35 genera. The revision of this group has occupied the attention of several foreign and British palæontologists; we may allude to Barrande*, M'Coy, and Salter. In the preface of the 'Catalogue' Mr. Salter's thorough revision of the list of the British species is specially acknowledged. The second group referred to consists of 32 species of Phyllopods and Pœcilopods, in 10 genera, which are chiefly palæozoic, and known by Salters's and M'Coy's descriptions. Some of the Limnadiadæ, however, from recent unpublished observations, appear to range from the Devonian to the present epoch. Thirdly, the microscopic Ostracoda; of these, 81 species, in 9 genera and subgenera, have been arranged in the catalogue by Rupert Jones. At present the majority appears to belong to the Carboniferous, Permian, Cretaceous, and Tertiary formations. Those of the first are chiefly Prof. M'Coy's species; the next two groups have been monographed by Mr. R. Jones; and the tertiary British forms await a similar treatment. In the mean time geologists have M. Bosquet's beautiful treatise on the tertiary Entomostraca of France and Belgium to refer to. The jurassic strata will probably yield their share in due time. Extensive undescribed collections exist. Altogether, this extensive member of the Entomostracous group promises to afford useful characteristics for the geologist.

The fragmentary and obscure conditions under which Insect-remains are usually found have rendered it difficult for Mr. Westwood, Mr. Brodie, and their fellow-labourers to specify the exact relations of the many specimens from the Lias, Great Oolite, Purbeck, and other formations. The numbers given in the above Table are only approximate; the specimens themselves are exceedingly numerous. In the "Addenda," the discovery of Insect-remains in the Wealden by the Messrs. Binfield is noticed, as well as the researches of Mr. Brodie and Mr. Westwood in the Purbeck Insects of Dorset. Mr. Westwood's memoir has since appeared, with numerous illustrations.

* See Annals and Mag. Nat. Hist. 2nd Ser. vol. xii. p. 130.

In the Mollusca, as a whole, we have the enormous increase of 1889 species, in 119 genera. The annexation of the Bryozoa, and the enlarged lists of the Palliobranchiates, Lamellibranchiates, Gastropods, and Cephalopods, make up the mass of the added material. It is impossible to analyse this here. To enumerate the authors of this increase in the bulk and improvement in the arrangement of these species, we must catalogue the palæontologists themselves who have worked together during the last ten years,—and amongst them Mr. Morris himself, as an eminent historian of the fossil molluscs and of the conditions under which they lived. And, alas! too, we should have to recall the names of some, dearly lamented, who have been taken from amongst us before their hands were weary of hammer or of pen.

We refer then to the Preface and to the Book itself for indications of the work done in this wide department by the collectors, the authors, and the compiler of the 'Catalogue;' and we will offer but one or two special remarks.

Amongst the most important points connected with the emended catalogue of the Molluscs, we must notice that in the family of the Palliobranchiates several good distinctive groupings have been usefully introduced. Thus the large group formerly comprised under *Terebratula* has now been subdivided into *Terebratula* and *Rhynchonella*, so well characterized not only by the peculiar position of the foramen and by the external aspect, but also by the marked difference of the internal calcareous appendages. As minor divisions of the original group, we find *Argiope*, *Terebratulina*, *Terebratella*, and others carefully distinguished. The genus *Siphonotetra*, previously recognized only as a Russian form, is an interesting addition by the Author himself to the British list. Why the bad word "Brachiopod" should be retained when every body is willing to allow its inappropriateness for a creature that has not in any sense either *arms* or *feet*, we cannot tell, unless it be on account of the determined adhesion of some modern naturalists to the habit of naming things on the *lucus a non lucendo* principle. This would have been a proper opportunity for throwing overboard an incorrect word, the place of which is already well supplied.

The Radiolites may now follow *Diceras* into the Dimyaria, and take their place near the Chamidæ, in accordance with Mr. S. P. Woodward's elaborate exposition of the alliances of the Rudista lately read before the Geological Society; this view is also explained in his valuable and concise 'Treatise on Shells' lately published.

Amongst the mollusca there are several genera that are very rich in the number of their species. In these instances the species are grouped either in the great geologic or the smaller stratigraphical series, as most convenient for the student. Thus *Avicula*, *Nucula*, and *Natica* have their palæozoic, secondary, and tertiary groups; and *Rhynchonella* and *Terebratula* are sorted into palæozoic, oolitic, cretaceous, and tertiary.

Lastly, we have occasion to remark that the locality of "Bracklesham," so important as indicative of a peculiar formation, is occa-

sionally omitted in connection with the middle eocene species in the 'Catalogue.' This may be corrected by reference to 'Dixon's fossils of Sussex and Hants.' The lists of London Clay and Bracklesham fossils just published in the 'Quart. Geol. Journal,' by Mr. Prestwich, may be here mentioned as valuable adjuncts to this portion of the 'Catalogue.'

For the augmented and revised list of the Fishes the author acknowledges his obligation to Sir P. Egerton, who, with Professor Agassiz, has so eminently advanced our knowledge of palichthyology.

The additions to the Reptiles have been compiled chiefly from the publications of Prof. Owen and the late Dr. Mantell. The newest additions are the *Nuthetes* and *Macellodus*, discovered early this year in the Purbeck rocks near Swanage. In the present edition we find a page devoted to Ichnites, or the footsteps and tracks of Reptiles, including the *Cheirotherium*, the interesting series from Corncockle Muir, and perhaps nearly every instance published in English works. The footmarks in the Wealden, as yet of doubtful origin, have since been made the subject of a memoir by Mr. Beckles.

The short list of fossil Birds increases but slowly from year to year. To the present list, however, there is still a brace or so from the Caves to be added, besides an interesting relic from the Lower Eocene beds near Woolwich, noticed by Mr. Prestwich in the 'Geol. Journal' of May 1854. Since the Catalogue was published Mr. Bowerbank has described another bird's bone from the London Clay of Sheppey.

The augmented Catalogue of Mammalia speaks everywhere of Prof. Owen's labours. The *Spalacotherium tricuspidens* (misprinted in the 'Catalogue') is the latest arrival. Its affinities and geological value are dwelt upon fully in Prof. Owen's memoir in the 'Geol. Soc. Journal.' Mr. Charlesworth's new mammal (*Stereognathus*) from the Stonesfield Oolite is a good beginning for the Supplement, which we hope will soon have to be made for this valuable 'Catalogue.'

The list of organic remains *incertæ sedis*, though relieved of a few now better understood forms, is still the receptacle for a variety of dubiums and problematicums from various geological sources. The *Parka decipiens*, of Fleming, may be added to this list with propriety, to take its chance with the others of being elucidated by the perseverance, the acumen, and the good fortune of palæontologists. With this list of puzzling odds and ends,—and very few they are in comparison with the 8359 species enumerated in the 'Catalogue,'—we close our remarks on the results afforded by the foregoing Table.

Of the natural groups into which the materials of the 'Catalogue' are thrown, nearly all have a more or less elaborate table of families, and sometimes of genera, prefixed. These appear to have been constructed with special reference to palæobotany and palæozoology; and they will prove of great service in keeping the remembrance of the natural orders and affinities distinct in the mind of the student and the amateur. Such comprehensive tables for the Plants, Crustaceans, and the Fishes in particular, could not be found elsewhere.

The chief object of the author of the valuable compilation under

notice has been to supply references to the best figures that have been published of the fossils of the British Isles, including, if possible, the earliest illustrations; so that all the "types" may readily be found. Occasionally more latitude has been allowed, and the references to the figures and descriptions indicate everything that has been published on the respective species. In all cases, monographs that embrace the bibliographical history of the several forms are carefully adverted to.

Hence this work is eminently useful to the geologist and palæontologist; for it assists them in the strict determination of the species peculiar to each formation; and they are hereby enabled without loss of time to prove the full value of their observations and collections, to draw up lists of the fossils of their respective neighbourhoods, compare the fossil products of various localities, and advance the knowledge of both practical and theoretical geology in the British Isles.

And not only in our own country, but in Europe, America, India, Australia,—wherever geology is studied, this work will be found of essential service. For although all the references to foreign works are not given (English publications having generally the preference), and though the foreign localities of species not peculiar to the British Isles are not always mentioned,—yet, in common with geologists at home, our foreign brethren in the science will find Mr. Morris's unpretending work a rich mine of palæontological knowledge, ever ready to yield information to the student in his researches in bibliography, or in his examination into natural-history affinities.

That foreign naturalists fully appreciated the value of the 'Catalogue' in its first edition, the "European reputation" which the author earned by its production is sufficient evidence; and the general 'Index' by Bronn and his colleagues, and some of the valuable Catalogues by D'Orbigny, Giebel, Geinitz, and others, whether general or local in their characters, have avowedly had "Morris's Catalogue" for their example.

The general catalogues above referred to are highly valuable, and are indeed often indispensable to the student,—for they afford synopses of all the known fossil forms of animal and vegetable life, and of their distribution in the geologic series (as far as the accounts of the very numerous observers can be reduced to an orderly arrangement); and moreover the German authors have laboured to supply every bibliographic reference, of whatever value, for each species; yet the great desideratum of strict specific determination, combined with an exact indication of stratigraphical and geographical locality, is only supplied in such a work as that before us.

Prof. J. Phillips has well observed that "the most important results to geology, arising from the contemplation of organic remains, are founded on a minute scrutiny of their specific characters, and a careful register of their localities in the strata. It is not enough for the rigid accuracy of modern inquiry, to say that a given rock contains corals, shells, and bones of fishes; but we must know the particular species, and determine all the circumstances of their occur-

rence. The more exact and extended our researches on this subject become, the more clear will be our statements on the succession of created beings, the more certain our applications of zoological principles to determine the relative antiquity of rocks, and the more satisfactory our views of the formation of the strata."

In recommending this new and enlarged edition of Mr. Morris's 'Catalogue' to the careful study of the geologist and the natural-history student, we must express our hope that the Author will edit at frequent intervals, supplemental notices of the new species as they accumulate, as well as a set of synoptical lists and tables compiled from the present work, exhibiting at a glance the stratigraphical distribution of the families, genera, and species of fossils found in Great Britain and Ireland. This, though seemingly but a clerky task, will require the careful supervision of a master.

Popular Conchology. By AGNES CATLOW. Second Edition.
London: Longmans, 1854. 12mo.

In this little book, of which a second edition is now before us, Miss Catlow has brought together, in a popular form, the characters of the genera of Mollusca; and although the work is, of course, almost entirely a compilation, the fair author appears to have exercised considerable judgment in the selection of materials, and her book, we should think, will prove exceedingly useful to the younger students of this branch of zoology.

The system adopted in the present edition is derived from that given by Philippi in his 'Handbuch,' founded upon the structure of the molluscous animals. In the first edition, Lamarck's shell system was followed. The generic characters are generally copied from the works of other authors; and, in most cases, the number of species included in each genus is given from the most recent authorities. Most of the genera are illustrated with very good woodcuts of the shells, which will greatly facilitate the work of the young conchologist in the arrangement of his collection.

There are some things, especially in the introductory chapter on the structure of the Mollusca in general, which might have been improved with very little additional trouble, but which would have rendered the book far more satisfactory. As an instance, we may refer to the very curious account given by our author of the mode of formation of shell. She tells us that from the mantle "a liquid exudes, which, on exposure to air or water, hardens into shell,"—an explanation of the phenomenon which we fear will hardly prove satisfactory to an inquiring mind. On the whole, however, Miss Catlow has produced a book which will no doubt be highly acceptable to a very large class of readers.